

8 Literaturverzeichnis

- AGRE, P. (2004)
Nobel Lecture - Aquaporin Water Channels.
The Nobel Prizes 2003. Stockholm
- ALEXOPOULOS, C.; KARAGIANNIDIS, A.; KRITAS, S. K.; BOSCO, C.; GEORGOULAKIS, I. E.; KYRIAKIS, S. C. (2001)
Field evaluation of a bioregulator containing live *Bacillus cereus* spores on health status and performance of sows and their litters.
J Vet Med A Physiol Pathol Clin Med. **48**: 137-45
- AMASHEH, S.; MEIRI, N.; GITTER, A. H.; SCHONEBERG, T.; MANKERTZ, J.; SCHULZKE, J. D.; FROMM, M. (2002)
Claudin-2 expression induces cation-selective channels in tight junctions of epithelial cells.
J Cell Sci. **115**: 4969-76
- ANDERSON, J. M. (2001)
Molecular structure of tight junctions and their role in epithelial transport.
News Physiol Sci. **16**: 126-30
- ARGENZIO, R. A.; LIACOS, J.; BERSCHNEIDER, H. M. ; WHIPP, S. C.; ROBERTSON, D. C. (1984)
Effect of heat-stable enterotoxin of *Escherichia coli* and theophylline on ion transport in porcine small intestine.
Can J Comp Med. **48**: 14-22
- ARGENZIO, R. A.; LIACOS, J. A. (1990)
Endogenous prostanoids control ion transport across neonatal porcine ileum in vitro.
Am J Vet Res. **51**: 747-51
- ARGENZIO, R. A.; RHOADS, J. M.; ARMSTRONG, M.; GOMEZ, G. (1994)
Glutamine stimulates prostaglandin-sensitive Na(+)-H⁺ exchange in experimental porcine cryptosporidiosis.
Gastroenterology. **106**: 1418-28
- ARONSON, P. S. (1981)
Identifying secondary active solute transport in epithelia.
Am J Physiol. **240**: F1-11
- AU, A.; GUPTA, A.; SCHEMBRI, P.; CHEESEMAN, C. I. (2002)
Rapid insertion of GLUT2 into the rat jejunal brush-border membrane promoted by glucagon-like peptide 2.
Biochem J. **367**: 247-54
- AWATI, A. A. (2005)
Prebiotics in piglet nutrition? Fermentation kinetics along the GI Tract.
Wageningen University

- BAKKER, R.; GROOT, J. A. (1984)
cAMP-mediated effects of ouabain and theophylline on paracellular ion selectivity.
Am J Physiol. **246**: G213-7
- BALTESS, S. (2001)
Einfluss von Retinoiden auf die Differenzierung und Permeabilität der Caco-2 Zellkultur als Modell für die Gastrointestinale Barriere.
Dissertation, Hannover, Tierärztliche Hochschule
- BARMEYER, C.; HARREN, M.; SCHMITZ, H.; HEINZEL-PLEINES, U.; MANKERTZ, J.; SEIDLER, U.; HORAK, I.; WIEDENMANN, B.; FROMM, M.; SCHULZKE, J. D. (2004)
Mechanisms of diarrhea in the interleukin-2-deficient mouse model of colonic inflammation.
Am J Physiol Gastrointest Liver Physiol. **286**: G244-52
- BARRETT, K. E. (1997)
Bowditch lecture. Integrated regulation of intestinal epithelial transport: intercellular and intracellular pathways.
Am J Physiol. **272**: C1069-76
- BARRETT, K. E. (2000)
New insights into the pathogenesis of intestinal dysfunction: secretory diarrhea and cystic fibrosis.
World J Gastroenterol. **6**: 470-474
- BARRETT, K. E.; KEELY, S. J. (2000)
Chloride secretion by the intestinal epithelium: molecular basis and regulatory aspects.
Annu Rev Physiol. **62**: 535-72
- BAUM, B.; LIEBLER-TENORIO, E. M.; ENSS, M. L.; POHLENZ, J. F.; BREVES, G. (2002)
Saccharomyces boulardii and bacillus cereus var. Toyoi influence the morphology and the mucins of the intestine of pigs.
Z Gastroenterol. **40**: 277-84
- BEGENISICH, T.; MELVIN, J. E. (1998)
Regulation of chloride channels in secretory epithelia.
J Membr Biol. **163**: 77-85
- BENJAMIN, M. A.; LU, J.; DONNELLY, G.; DUREJA, P.; MCKAY, D. M. (1998)
Changes in murine jejunal morphology evoked by the bacterial superantigen Staphylococcus aureus enterotoxin B are mediated by CD4+ T cells.
Infect Immun. **66**: 2193-9
- BERGER, H.; KETZ, H. A. (1969)
Verdauung, Resorption, Intermediärstoffwechsel bei landwirtschaftlichen Nutztieren.
Deutscher Landwirtschaftsverlag, Berlin
- BERRIDGE, M. J. (2005)
Unlocking the secrets of cell signaling.
Annu Rev Physiol. **67**: 1-21

BEUBLER, E.; SCHULIGOI, R.; CHOPRA, A. K.; RIBARDO, D. A.; PESKAR, B. A. (2001)
Cholera toxin induces prostaglandin synthesis via post-transcriptional activation of cyclooxygenase-2 in the rat jejunum.
J Pharmacol Exp Ther. **297**: 940-5

BFR - BUNDESINSTITUT FÜR RISIKOBEWERTUNG (1996)
Avoparcin als Futterzusatzstoff in der Tierernährung vorläufig verboten.
accessed May 22, 2005. Web Page. Available at:
<http://www.bgvv.de/cms5w/sixcms/detail.php/780>

BIDMON, B.; ENDEMANN, M.; MULLER, T.; ARBEITER, K.; HERKNER, K.; AUFRICHT, C. (2000)
Heat shock protein-70 repairs proximal tubule structure after renal ischemia.
Kidney Int. **58**: 2400-7

BLIKSLAGER, A.; HUNT, E.; GUERRANT, R.; RHOADS, M.; ARGENZIO, R. (2001a)
Glutamine transporter in crypts compensates for loss of villus absorption in bovine cryptosporidiosis.
Am J Physiol Gastrointest Liver Physiol. **281**: G645-53

BLIKSLAGER, A. T.; PELL, S. M.; YOUNG, K. M. (2001b)
PGE2 triggers recovery of transmucosal resistance via EP receptor cross talk in porcine ischemia-injured ileum.
Am J Physiol Gastrointest Liver Physiol. **281**: G375-81

BLIKSLAGER, A. T.; RHOADS, J. M.; BRISTOL, D. G. ; ROBERTS, M. C.; ARGENZIO, R. A. (1999a)
Glutamine and transforming growth factor-alpha stimulate extracellular regulated kinases and enhance recovery of villous surface area in porcine ischemic-injured intestine.
Surgery. **125**: 186-94

BLIKSLAGER, A. T.; ROBERTS, M. C.; ARGENZIO, R. A. (1999b)
Prostaglandin-induced recovery of barrier function in porcine ileum is triggered by chloride secretion.
Am J Physiol. **276**: G28-36

BLIKSLAGER, A. T.; ROBERTS, M. C.; RHOADS, J. M. ; ARGENZIO, R. A. (1997)
Prostaglandins I2 and E2 have a synergistic role in rescuing epithelial barrier function in porcine ileum.
J Clin Invest. **100**: 1928-33

BLIKSLAGER, A. T.; ZIMMEL, D. N.; YOUNG, K. M.; CAMPBELL, N. B.; LITTLE, D.; ARGENZIO, R. A. (2002)
Recovery of ischaemic injured porcine ileum: evidence for a contributory role of COX-1 and COX-2.
Gut. **50**: 615-23

- BOUDRY, G.; PÉRON, V.; LALLČS, J. P.; SČVE, B. (2003)
Weaning Induces Both Transient and Long-Lasting Modifications of Secretory and Absorptive Physiology of Piglets Small Intestine.
9th International Symposium on Digestive Physiology in Pigs: Banff, AB, Canada. Page 121
- BOUDRY, G.; PÉRON, V.; LALLČS, J. P.; SÉVE, B. (2004)
Weaning Induces Both Transient and Long-Lasting Modifications of Absorptive, Secretory and Barrier Properties of Piglets Intestine.
Journal of Nutrition . **134(9)**: 2256-62
- BRADBURY, N. A.; COHN, J. A.; VENGLARIK, C. J.; BRIDGES, R. J. (1994)
Biochemical and biophysical identification of cystic fibrosis transmembrane conductance regulator chloride channels as components of endocytic clathrin-coated vesicles.
J Biol Chem. **269**: 8296-302
- BRANDAO, R. L.; CASTRO, I. M.; BAMBIRRA, E. A.; AMARAL, S. C.; FIETTO, L. G.; TROPPIA, M. J.; NEVES, M. J.; DOS SANTOS, R. G.; GOMES, N. C.; NICOLI, J. R. (1998)
Intracellular signal triggered by cholera toxin in *Saccharomyces boulardii* and *Saccharomyces cerevisiae*.
Appl Environ Microbiol. **64**: 564-8
- BREVES, G.; HATTENHAUER, O.; SCHÖNEBERGER, M. ; WINCKLER, C. (1997a)
Untersuchungen zum Einfluß von Probiotika auf die intestinale Glucose- und Alaninaufnahme beim Schwein.
Proc. Soc. Nutr. Physiol. **6**: 45
- BREVES, G.; SCHRÖDER, B.; WINCKLER, C. (1997b)
Einfluß von Probiotika auf die intestinale Barriere beim Schwein.
Vitamine Und Weitere Zusatzstoffe in Der Ernährung Von Mensch Und Tier
6th Symposium "Vitamins and Additives in the Nutrition of Man and Animal" :
Jena/Thüringen. Schubert, R., Flachowsky, G., Bitsch, R., Jahreis, G.; S. 70-74
- BREVES, G.; SZENTKUTI, L.; SCHRODER, B. (2001)
Effects of oligosaccharides on functional parameters of the intestinal tract of growing pigs.
Dtsch Tierarztl Wochenschr. **108**: 246-8
- BREVES, G.; WALTER, C.; BURMESTER, M.; SCHRÖDER, B. (2000)
In vitro studies on the effects of *Saccharomyces boulardii* and *Bacillus cereus* var. *toyo* on nutrient transport in pig jejunum.
J. Anim. Physiol. a. Anim. Nutr. **84**: 9-20
- BRIEL, C. (2002)
Veränderungen der Anzahl und Verteilung von Plasmazellen und Lymphozytensubpopulationen in der Darmschleimhaut des Schweines nach Applikation von Probiotika.
Dissertation, Hannover, Tierärztliche Hochschule
- BUCHER, E. (2004)
Antibiotika (Leistungsförderer).
Bayerisches Landesamt für Gesundheit und Lebensmittelsicherheit; 2004: 1-3

- BUDDINGTON, R. K.; ELNIF, J.; PUCHAL-GARDINER, A. A.; SANGILD, P. T. (2001)
Intestinal apical amino acid absorption during development of the pig.
Am J Physiol Regul Integr Comp Physiol. **280**: R241-7
- BUKHAVE, K.; RASK-MADSEN, J. (1980)
Saturation kinetics applied to in vitro effects of low prostaglandin E2 and F 2 alpha concentrations on ion transport across human jejunal mucosa.
Gastroenterology. **78**: 32-42
- BUSCH, A.; HERRMANN, H. H.; KÜHN, I.; SIMON, O.; STRUCK, J.; SÜPHKE, E. (1999)
Probiotika in der Tierernährung.
Arbeitsgemeinschaft für Wirkstoffe in der Tierernährung e.V. (AWT), Bonn
- BUTS, J. P.; BERNASCONI, P.; VAN CRAYNEST, M. P.; MALDAGUE, P.; DE MEYER, R. (1986)
Response of human and rat small intestinal mucosa to oral administration of Saccharomyces boulardii .
Pediatr Res. **20**: 192-6
- BUTS, J. P.; DE KEYSER, N.; DE RAEDEMAEKER, L. (1994)
Saccharomyces boulardii enhances rat intestinal enzyme expression by endoluminal release of polyamines.
Pediatr Res. **36**: 522-7
- BÜHL, A.; ZÖFEL, P. (2000)
SPSS Version 9.
Addison Wesley Verlag, München
- CAREY, H. V.; HAYDEN, U. L.; TUCKER, K. E. (1994)
Fasting alters basal and stimulated ion transport in piglet jejunum.
Am J Physiol. **267**: R156-63
- CASTAGLIUOLO, I.; RIEGLER, M. F.; VALENICK, L.; LAMONT, J. T.; POTHOUKAKIS, C. (1999)
Saccharomyces boulardii protease inhibits the effects of Clostridium difficile toxins A and B in human colonic mucosa.
Infect Immun. **67**: 302-7
- CERA, K. R.; MAHAN, D. C.; CROSS, R. F.; REINHART, G. A.; WHITMOYER, R. E. (1988)
Effect of age, weaning and postweaning diet on small intestinal growth and jejunal morphology in young swine.
J Anim Sci. **66**: 574-84
- CHA, S. (1970)
Kinetic Behavior at High Enzyme Concentrations.
The Journal of Biological Chemistry. **245**: 4814-4818
- CHAPAT, L.; CHEMIN, K.; DUBOIS, B.; BOURDET-SICARD, R.; KAISERLIAN, D. (2004)
Lactobacillus casei reduces CD8+ T cell-mediated skin inflammation.
Eur J Immunol. **34**: 2520-8

- CHEN, T. Y. (2005)
Structure and function of clc channels.
Annu Rev Physiol. **67**: 809-39
- CIVAN, M. M.. (1983)
2 Morphologic Studies, 3 Transepithelial electrical measurements.
CIVAN, M. M. Epithelial Ions and Transport
Application of Biophysical Techniques. New York: Verlag John Wiley & sons; 5-31, 32-63.
BITTAR, E. E.; Transport in Teh Life Sciences; 4
- CLARKE, L. L.; GRUBB, B. R.; GABRIEL, S. E.; SMITHIES, O.; KOLLER, B. H.; BOUCHER, R. C. (1992)
Defective epithelial chloride transport in a gene-targeted mouse model of cystic fibrosis.
Science. **257**: 1125-8
- COLEGIO, O. R.; VAN ITALLIE, C. M.; MCCREA, H.; RAHNER, C.; ANDERSON, J. M. (2002)
Claudins create charge-selectivity pores.
European Intestinal Transport Group (EITG), 18th Meeting: Egmond aan Zee. The Netherlands
- D'ANDREA, L.; LYTLE, C.; MATTHEWS, J. B.; HOFMAN, P.; FORBUSH, B. 3RD; MADARA, J. L. (1996)
Na:K:2Cl cotransporter (NKCC) of intestinal epithelial cells. Surface expression in response to cAMP.
J Biol Chem. **271**: 28969-76
- DAENICKE. R; FLACHOWSKY, G. (2002)
Jahresbericht 2001
Bundesforschungsanstalt für Landwirtschaft (FAL). Braunschweig
- DAVIDSON, J. N.; HIRSH, D. C. (1976)
Bacterial competition as a means of preventing neonatal diarrhea in pigs.
Infect Immun. **13**: 1773-4
- DAWSON, D. C. (1991)
Ion channels and colonic salt transport.
Annu Rev Physiol. **53**: 321-39
- DEACHAPUNYA, C.; O'GRADY, S. M. (1998)
Regulation of chloride secretion across porcine endometrial epithelial cells by prostaglandin E2.
J Physiol. **508**: 31-47
- DEVOR, D. C.; DUFFEY, M. E. (1992)
Carbachol induces K⁺, Cl⁻, and nonselective cation conductances in T84 cells: a perforated patch-clamp study.
Am J Physiol. **263**: C780-7

- DHARMSATHAPHORN, K.; WEYMER, A.; MCROBERTS, J. A. (1985)
Chloride secretion induced by prostaglandin E1 (PGE1): participation of Na, K, Cl cotransport, Cl channels and K channels (abstract).
Gastroenterology. **88**: 1364
- DIEHL, J. M.; ARBINGER, R. (1990)
Einführung in die Interferenzstatistik.
Klotz-Verlag, Eschborn
- DIEZ-SAMPEDRO, A.; HIRAYAMA, B. A.; OSSWALD, C.; GORBOULEV, V.; BAUMGARTEN, K.; VOLK, C.; WRIGHT, E. M.; KOEPEL, H. (2003)
A glucose sensor hiding in a family of transporters.
Proc Natl Acad Sci U S A. **100**: 11753-8
- DOHMS, J. (2004)
Aspekte der Darmgesundheit und Chancen für den Einsatz von Probiotika.
Lohmann Information. **4/04**: 1-4
- DUFFEY, M. E.; HAINAU, B.; HO, S.; BENTZEL, C. J. (1981)
Regulation of epithelial tight junction permeability by cyclic AMP.
Nature. **294**: 451-3
- DUQUETTE, P. P.; BISSONNETTE, P.; LAPOINTE, J. Y. (2001)
Local osmotic gradients drive the water flux associated with Na(+)/glucose cotransport.
Proc Natl Acad Sci U S A. **98**: 3796-801
- EGGENTON, J.; FLOWER, R. J.; HARDCASTLE, P. T.; SANFORD, P. A.; SMYTH, D. H. (1974)
Proceedings: Prostaglandins and intestinal function.
J Physiol. **238**: 79p-80p
- EL ASMAR, R.; PANIGRAHI, P.; BAMFORD, P.; BERTI, I.; NOT, T.; COPPA, G. V.; CATASSI, C.; FASANO, A. (2002)
Host-dependent zonulin secretion causes the impairment of the small intestine barrier function after bacterial exposure.
Gastroenterology. **123**: 1607-15
- ENGELHARDT, W.; BREVES, G. (2000)
Physiologie der Haustiere.
Enke Verlag, Stuttgart
- ERHARD, M. H.; LEUZINGER, K.; STANGASSINGER, M. (2000)
Untersuchungen zur prophylaktischen Wirkung der Verfütterung eines Probiotikums und von erregerspezifischen Kolostrum- und Dotterantikörpern bei neugeborenen Kälbern.
J. Anim. Physiol. a. Anim. Nutr. **84**: 85-94
- ERLWANGER, K. H.; UNMACK, M. A.; GRONDAHL, M. L. ; SKADHAUGE, E.; THORBOLL, J. E. (1999)
Effect of age on vasoactive intestinal polypeptide-induced short-circuit current in porcine jejunum.
Comp Biochem Physiol A Mol Integr Physiol. **124**: 29-33

- EUROPEAN FOOD SAFETY AUTHORITY. (2004)
 Gutachten des wissenschaftlichen Gremiums FEEDAP angenommen am 7. Mai 2004
 Gutachtens des Wissenschaftlichen Gremiums für Zusatzstoffe, Erzeugnisse und Stoffe in
 der Tierernährung über die Wirksamkeit des Zusatzstoffes Toyocerin für Mastschweine.
 (FRAGE NR. EFSA-Q-2003-086).
 EUROPEAN FOOD SAFETY AUTHORITY 2004
- FAN, M. Z.; ADEOLA, O.; MCBURNEY, M. I.; CHEESEMAN, C. I. (1998)
 Kinetic analysis of L-glutamine transport into porcine jejunal enterocyte brush-border
 membrane vesicles.
 Comparative Biochemistry and Physiology Part A. **121**: 411–422
- FANNING, A. S.; MITIC, L. L.; ANDERSON, J. M. (1999)
 Transmembrane proteins in the tight junction barrier.
 J Am Soc Nephrol. **10**: 1337-45
- FAVUS, M. J. (1985)
 Factors that influence absorption and secretion of calcium in the small intestine and colon.
 Am J Physiol. **248**: G147-57
- FERRARIS, R. P.; DIAMOND, J. (1997)
 Regulation of intestinal sugar transport.
 Physiol Rev. **77**: 257-302
- FERRARIS, R. P.; YASHARPOUR, S.; LLOYD, K. C.; MIRZAYAN, R.; DIAMOND, J. M. (1990)
 Luminal glucose concentrations in the gut under normal conditions.
 Am J Physiol. **259**: G822-37
- FIELD, M. (1976)
 Regulation of active ion transport in the small intestine.
 Ciba Found Symp. 109-27
- FIELD, M. (2003)
 Intestinal ion transport and the pathophysiology of diarrhea.
 J Clin Invest. **111**: 931-43
- FIELD, M.; MUSCH, M. W.; STOFF, J. S. (1981)
 Role of prostaglandins in the regulation of intestinal electrolyte transport.
 Prostaglandins. **21 Suppl**: 73-9
- FIELD, M.; RAO, M. C.; CHANG, E. B. (1989)
 Intestinal electrolyte transport and diarrheal disease (Part 1 and 2).
 N. Engl. J. Med. **321**: a 800-806, b 879-883
- FLEMSTROM, G.; ISENBERG, J. I. (2001)
 Gastroduodenal mucosal alkaline secretion and mucosal protection.
 News Physiol Sci. **16**: 23-8

- FLORIAN, P.; AMASHEH, S.; LESSIDRENSKY, M.; TODT, I.; BLOEDOW, A.; ERNST, A.; FROMM, M.; GITTER, A. H. (2003)
Claudins in the tight junctions of stria vascularis marginal cells.
Biochem Biophys Res Commun. **304**: 5-10
- FLORIAN, P.; SCHONEBERG, T.; SCHULZKE, J. D.; FROMM, M.; GITTER, A. H. (2002)
Single-cell epithelial defects close rapidly by an actinomyosin purse string mechanism with functional tight junctions.
J Physiol. **545**: 485-99
- FOITZIK, T.; KRUSCHEWSKI, M.; KROESEN, A. J.; HOTZ, H. G.; EIBL, G.; BUHR, H. J. (1999)
Does glutamine reduce bacterial translocation? A study in two animal models with impaired gut barrier.
Int J Colorectal Dis. **14**: 143-9
- FORTE, L. R.; THORNE, P. K.; EBER, S. L.; KRAUSE, W. J.; FREEMAN, R. H.; FRANCIS, S. H.; CORBIN, J. D. (1992)
Stimulation of intestinal Cl⁻ transport by heat-stable enterotoxin: activation of cAMP-dependent protein kinase by cGMP.
Am J Physiol. **263**: C607-15
- FOSKETT, J. K. (1990)
[Ca²⁺]_i modulation of Cl⁻ content controls cell volume in single salivary acinar cells during fluid secretion.
Am J Physiol. **259**: C998-1004
- FRANZ, T. J.; GALEY, W. R.; VAN BRUGGEN, J. T. (1968)
Further observations on asymmetrical solute movement across membranes.
J Gen Physiol. **51**: 1-12
- FREITAG, M.; HENSCHKE, H. U.; SCHULTE-SIENBECK, H.; REICHELT, B. (1998)
Kritische Betrachtung des Einsatzes von Leistungsförderern in der Tierernährung
Forschungsberichte des FB Agrarwirtschaft Soest, Universität - Gesamthochschule Paderborn; **8**
- FREITAG, M.; HENSCHKE, H. U.; SCHULTE-SIENBECK, H.; REICHELT, B. (1999)
Biologische Effekte konventioneller und alternativer Leistungsförderer.
Kraftfutter. **2**: 49-57
- FREITAS, R. A. (1999)
Nanomedicine, Volume I: Basic Capabilities.
Landes Bioscience, Georgetown, TX
- FRENCH, P. J.; BIJMAN, J.; EDIXHOVEN, M.; VAANDRAGER, A. B.; SCHOLTE, B. J.; LOHMANN, S. M. ; NAIRN, A. C.; DE JONGE, H. R. (1995)
Isotype-specific activation of cystic fibrosis transmembrane conductance regulator-chloride channels by cGMP-dependent protein kinase II.
J Biol Chem. **270**: 26626-31

- FRIZZELL, R. A.; SCHULTZ S.G. (1972)
 Ionic Conductance of Extracellular Shunt Pathway in Rabbit Ileum
 Influence of shunt on transmural sodium transport and electrical potential differences.
 The Journal of General Physiology. **59**: 318-346
- FULLER, R. (1989)
 Probiotics in man and animals.
 J Appl Bacteriol. **66**: 365-78
- FULLER, R. (1992)
 Probiotics. The scientific basis.
 Chapman & Hall, London
- FULLER, R. (1997)
 Probiotics 2.
 Chapman & Hall, London
- FULLER, R. (1999)
 Probiotics for farm animals.
 Probiotics: A critical Review. TANNOCK, G. W. Horizon scientific press, Wymondham, UK,
 15-22
- GARCIA, N. H.; RAMSEY, C. R.; KNOX, F. G. (1998)
 Understanding the Role of Paracellular Transport in the Proximal Tubule.
 News Physiol Sci. **13**: 38-43
- GARRIGA, C.; PEREZ-BOSQUE, A.; AMAT, C.; CAMPBELL, J. M.; RUSSELL, L.; POLO, J.;
 PLANAS, J. M.; MORETO, M. (2005)
 Spray-dried porcine plasma reduces the effects of staphylococcal enterotoxin B on glucose
 transport in rat intestine.
 J Nutr. **135**: 1653-8
- GEDEK, B. (1992)
 Mikroorganismen als Leistungsförderer beim Ferkel.
 Kraftfutter. **2**: 55-60
- GEDEK, B. (1994)
 Probiotika.
 Übersichten zur Tierernährung. **22**: 134-140
- GEDEK, B. (1995)
 Futter- und Fütterungshygiene (Probiotika und Tiergesundheit).
 Nutztierernährung. ABEL, H.; FLACHOWSKY, G.; JEROCH, H.; MOLNAR, S. 1. ed., Fischer
 Verlag, Jena, Stuttgart, 354-374
- GEDEK, B. R. (1991)
 Regulierung der Darmflora über die Nahrung [Regulation of the intestinal flora by food].
 Zentralbl Hyg Umweltmed. **191**: 277-301

- GIBSON, G. R.; ROBERFROID, M. B. (1995)
Dietary modulation of the human colonic microbiota: introducing the concept of prebiotics.
J Nutr. **125**: 1401-12
- GITTER, A. H.; BENDELDT, K.; SCHULZKE, J. D.; FROMM, M. (2000)
Trans/paracellular, surface/crypt, and epithelial/subepithelial resistances of mammalian
colonic epithelia.
Pflugers Arch. **439**: 477-82
- GLYNN, I. M. (2002)
A hundred years of sodium pumping.
Annu Rev Physiol. **64**: 1-18
- GNAMBS, T. (2004)
SPSS Tutorium III.
accessed September 15, 2005. Web Page. Available at:
<http://timo.gnambs.at/pages/spss/tut3/>
- GOODENOUGH, D. (2005)
Paracellular channels at the tight junction.
Experimental Biology: San Diego, CA. American Society for Investigative Pathology
- GOOKIN, J. L.; GALANKO, J. A.; BLIKSLAGER, A. T. ; ARGENZIO, R. A. (2003)
PG-mediated closure of paracellular pathway and not restitution is the primary determinant
of barrier recovery in acutely injured porcine ileum.
Am J Physiol Gastrointest Liver Physiol. **285**: G967-79
- GORDON, L. G. M.; KOTTRA, G.; FRÖMTER, E. (1990)
Methods to detect, quantify, and minimize edge leaks in Ussing chambers.
Methods Enzymol. **192**: 697-710
- GREGER, R. (2000)
Role of CFTR in the colon.
Annu Rev Physiol. **62**: 467-91
- GREGER, R.; BLEICH, M.; RIEDEMANN, N.; VAN DRIESSCHE, W.; ECKE, D.; WARTH, R.
(1997)
The role of K⁺ channels in colonic Cl⁻ secretion.
Comp Biochem Physiol A Physiol. **118**: 271-5
- GRONDAHL, M. L.; HANSEN, M. B.; LARSEN, I. E.; SKADHAUGE, E. (1996)
Age and segmental differences in 5-hydroxytryptamine-induced hypersecretion in the pig
small intestine.
J Comp Physiol [B]. **166**: 21-9
- GRONDAHL, M. L.; MUNCK, L. K.; SKADHAUGE, E. (1997)
Regional differences in the effect of mucosal glucose and amino acids on ion transport in
normal and cholera toxin-stimulated porcine small intestine.
Scand J Gastroenterol. **32**: 478-84

- GROOT, J. A.; BAKKER, R. (1988)
NaCl Transport in the Vertebrate Intestine.
NaCl Transport in Epithelia. GILLES, R. Springer-Verlag, Berlin , **1** 103-152
- GUARINO, A.; COHEN, M. B.; GIANELLA, R. A. (1987)
Small and Large Intestinal Guanylat Cyclase Activity in Children: Effect of Age and Stimulation by Escherichia coli Heat-Stable Enterotoxin.
Pediatric Research. **21**: 551-555
- GUARNER, F.; SCHAAFSMA, G. J. (1998)
Probiotics.
Int J Food Microbiol. **39**: 237-8
- GÖRKE, B.; LIEBLER-TENORIO, E. (2001)
Probiotika: Gibt es wissenschaftliche Grundlagen für ihre Wirkung? [Probiotics: Is there a scientific basis for their effects?].
Dtsch Tierarztl Wochenschr. **108**: 249-251
- GÖRKE, B. (2000)
Untersuchung der Schleimhautmorphologie im Dünn- und Dickdarm nach oraler Applikation von Saccharomyces boulardii und Bacillus cereus var. toyoi beim Schwein.
Hannover, Tierärztliche Hochschule
- HALAIHEL, N.; GERBAUD, D.; VASSEUR, M.; ALVARADO, F. (1999)
Heterogeneity of pig intestinal D-glucose transport systems.
Am J Physiol. **277**: C1130-41
- HALL, G. A.; BYRNE, T. F. (1989)
Effects of age and diet on small intestinal structure and function in gnotobiotic piglets.
Res Vet Sci. **47** : 387-92
- HAMPSON, D. J. (1986)
Alterations in piglet small intestinal structure at weaning.
Res Vet Sci. **40** : 32-40
- HANSON, J.; PARSON, D. S. (1988)
Transport and metabolism of glutamine and glutamate in the small intestine.
Glutamine and glutamate in mammals. KVAMME, E. Boca Raton, Fla: CRC Press
- HARDIN, J.; KROEKER, K.; CHUNG, B.; GALL, D. G. (2000)
Effect of proinflammatory interleukins on jejunal nutrient transport.
Gut. **47**: 184-91
- HEDIGER, M. A.; RHOADS, D. B. (1994)
Molecular physiology of sodium-glucose cotransporters.
Physiol Rev. **74**: 993-1026
- HIRAYAMA, B. A.; LOO, D. D.; WRIGHT, E. M. (1997)
Cation effects on protein conformation and transport in the Na⁺/glucose cotransporter.
J Biol Chem. **272**: 2110-5

- HOGAN, D. L.; YAO, B.; BARRETT, K. E.; ISENBERG, J. I. (1995)
Histamine inhibits prostaglandin E2-stimulated rabbit duodenal bicarbonate secretion via H2 receptors and enteric nerves.
Gastroenterology. **108**: 1676-82
- HOLTUG, K.; SKADHAUGE, E. (1991)
Ion transport across isolated pig jejunum.
Am J Physiol. **260**: G220-31
- HOOPER, L. V.; WONG, M. H.; THELIN, A.; HANSSON, L.; FALK, P. G.; GORDON, J. I. (2001)
Molecular analysis of commensal host-microbial relationships in the intestine.
Science. **291**: 881-4
- HOWARD, M.; JILLING, T.; DUVALL, M.; FRIZZELL, R. A. (1996)
cAMP-regulated trafficking of epitope-tagged CFTR.
Kidney Int. **49**: 1642-8
- IBEN, CH.; LEIBETSEDER, J. (1989)
Untersuchung der leistungsfördernden Wirkung von Toyocerin in der Ferkelaufzucht.
Wien. Tierärztl. Mschr. **76**: 363-366
- ICHIKAWA, H.; KUROIWA, T.; INAGAKI, A.; SHINEHA, R.; NISHIHIRA, T.; SATOMI, S.; SAKATA, T. (1999)
Probiotic bacteria stimulate gut epithelial cell proliferation in rat.
Dig Dis Sci. **44**: 2119-23
- IKARI, A.; NAKANO, M.; KAWANO, K.; SUKETA, Y. (2002)
Up-regulation of sodium-dependent glucose transporter by interaction with heat shock protein 70.
J Biol Chem. **277**: 33338-43
- IMMICH, H. (1974)
Medizinische Statistik.
F.K. Schattauer Verlag, Stuttgart
- JADAMUS, A. (2001)
Untersuchungen zur Wirksamkeit und Wirkungsweise des sporenbildenden Bacillus cereus var. toyoi im Verdauungstrakt von Broilern und Ferkeln.
Dissertation, Berlin, Freie Universität Berlin
- JADAMUS, A.; VAHJEN, W.; KÜHN, I. (1999)
Zur Wirkung des Probiotikums ToyoCerin in der Geflügelmast.
Lohmann Information. **2/99**: 1-4
- JADAMUS, A.; VAHJEN, W.; SCHAFFER, K.; SIMON, O. (2002)
Influence of the probiotic strain Bacillus cereus var. toyoi on the development of enterobacterial growth and on selected parameters of bacterial metabolism in digesta samples of piglets.
J Anim Physiol Anim Nutr (Berl). **86**: 42-54

- JADAMUS, A.; VAHJEN, W.; SIMON, O. (1999)
Effect of the probiotic *Bacillus cereus toyoi* on microbial activities in the intestine of piglets.
7th Symposium, Vitamins and Additives in Nutrition of Man and Animal: Jena/Thuringia
- JANSEN, N. (2004)
Wirkungen von *Enterococcus faecium* auf transportphysiologische Parameter des Jejunums vom Schwein.
Dissertation, Berlin, Freie Universität Berlin
- JASO-FRIEDMANN, L.; DREYFUS, L. A.; WHIPP, S. C. ; ROBERTSON, D. C. (1992)
Effect of age on activation of porcine intestinal guanylat cyclase and binding of *Escherichia coli* heat-stable enterotoxin (ST_a) to porcine intestinal cells and brush border membranes.
American Journal of Veterinary Res. **53**: 2251-2258
- JASTROW, H. (2001)
Elektronenmikroskopischer Atlas im Internet.
accessed April 19, 1005. Web Page. Available at: <http://www.uni-mainz.de/FB/Medizin/Anatomie/workshop/EM/EMTightJ.html>
- JENTSCH, T. J.; GUNTHER, W. (1997)
Chloride channels: an emerging molecular picture.
Bioessays. **19**: 117-26
- JENTSCH, T. J.; POET, M.; FUHRMANN, J. C.; ZDEBIK, A. A. (2005)
Physiological functions of CLC Cl⁻ channels gleaned from human genetic disease and mouse models.
Annu Rev Physiol. **67**: 779-807
- JENTSCH, T. J.; STEIN, V.; WEINREICH, F.; ZDEBIK, A. A. (2002)
Molecular structure and physiological function of chloride channels.
Physiol Rev. **82**: 503-68
- JORGENSEN, P. L.; HAKANSSON, K. O.; KARLISH, S. J. (2003)
Structure and mechanism of Na,K-ATPase: functional sites and their interactions.
Annu Rev Physiol. **65**: 817-49
- KAHRS, D. (1987)
Toyocerin in der Schweineproduktion.
Schweinewelt. 5-8
- KAHRS, D. (1991)
5 Jahre Erfahrung mit Toyocerin.
Lohmann Information. 1-8
- KAMP, F.; HAMILTON, J. A.; KAMP, F.; WESTERHOFF, H. V.; HAMILTON, J. A. (1993)
Movement of fatty acids, fatty acid analogues, and bile acids across phospholipid bilayers.
Biochemistry. **32**: 11074-86

- KANAI, N.; LU, R.; SATRIANO, J. A.; BAO, Y.; WOLKOFF, A. W.; SCHUSTER, V. L. (1995)
Identification and characterization of a prostaglandin transporter.
Science. **268**: 866-9
- KANDIL, H. M.; ARGENZIO, R. A.; CHEN, W.; BERSCHNEIDER, H. M.; STILES, A. D.;
WESTWICK, J. K.; RIPPE, R. A.; BRENNER, D. A.; RHOADS, J. M. (1995)
L-glutamine and L-asparagine stimulate ODC activity and proliferation in a porcine jejunal
enterocyte line.
Am J Physiol. **269**: G591-9
- KANDIL, H. M.; BERSCHNEIDER, H. M.; ARGENZIO, R. A. (1994)
Tumour necrosis factor alpha changes porcine intestinal ion transport through a paracrine
mechanism involving prostaglandins.
Gut. **35**: 934-40
- KAPLAN, J. H. (1983)
Sodium ions and the sodium pump: transport and enzymatic activity.
Am J Physiol. **245**: G327-33
- KAUNE, R.; KASSIANOFF, I.; SCHRODER, B.; HARMEYER, J. (1992)
The effects of 1,25-dihydroxyvitamin D-3 deficiency on Ca(2+)-transport and Ca(2+)-
uptake into brush-border membrane vesicles from pig small intestine.
Biochim Biophys Acta. **1109**: 187-94
- KAUR, I. P.; CHOPRA, K.; SAINI, A. (2002)
Probiotics: potential pharmaceutical applications.
Eur J Pharm Sci. **15**: 1-9
- KELLETT, G. L. (2001)
The facilitated component of intestinal glucose absorption.
J Physiol. **531**: 585-95
- KELLETT, G. L.; HELLIWELL, P. A. (2000)
The diffusive component of intestinal glucose absorption is mediated by the glucose-
induced recruitment of GLUT2 to the brush-border membrane.
Biochem J. **350**: 155-62
- KEREM, B.; ROMMENS, J. M.; BUCHANAN, J. A.; MARKIEWICZ, D.; COX, T. K.;
CHAKRAVARTI, A.; BUCHWALD, M.; TSUI, L. C. (1989)
Identification of the cystic fibrosis gene: genetic analysis.
Science. **245**: 1073-80
- KIDD, J. F.; THORN, P. (2000)
Intracellular Ca²⁺ and Cl⁻ channel activation in secretory cells.
Annu Rev Physiol. **62**: 493-513
- KIMBERG, D. V.; FIELD, M.; JOHNSON, J.; HENDERSON, A.; GERSHON, E. (1971)
Stimulation of intestinal mucosal adenyl cyclase by cholera enterotoxin and prostaglandins.
J Clin Invest. **50**: 1218-30

- KIRCHGESSNER, M.; ROTH, F. X.; EIDELSBURGER, U.; GEDEK, B. (1993)
[The nutritive efficiency of *Bacillus cereus* as a probiotic in the raising of piglets. 1. Effect on the growth parameters and gastrointestinal environment].
Arch Tierernahr. **44**: 111-21
- KIRK, K. L.; HALM, D. R.; DAWSON, D. C. (1980)
Active sodium transport by turtle colon via an electrogenic Na-K exchange pump.
Nature. **287**: 237-9
- KLEIN, C. (2001)
PTHrP und Milch stimulieren einen Vitamin D-unabhängigen aktiven Calciumtransport im Darm von Saugferkeln.
Dissertation, Hannover, Tierärztliche Hochschule
- KLEIN, U.; SCHMIDTS, H. L. (1997)
Zum Einfluss des Bioregulators Paciflor auf die Morphologie der Dünndarmmucosa beim Schwein.
Proc. Soc. Nutr. Physiol. **6**: 41
- KNEIFEL, W. (2005)
Entwicklung und Qualitätsmerkmale von Probiotika.
Lohmann Information. **1/2005**: 1-4
- KNIPPING, S. (2003)
Untersuchungen zur Regulation der seromukösen Drüsen der respiratorischen Nasenschleimhaut des Menschen.
Dissertation, Halle, Martin-Luther-Universität Halle-Wittenberg
- KOEFOED-JOHNSEN, V.; USSING, H. H. (1958)
The Nature of the Frog Skin Potential.
Acta Physiol. Scand. **42**: 298-308
- KOHLER, K.; LOUVARD, D.; ZAHRAOUI, A. (2004)
Rab13 regulates PKA signaling during tight junction assembly.
J Cell Biol. **165**: 175-80
- KOJIMA, K.; MUSCH, M. W.; REN, H.; BOONE, D. L.; HENDRICKSON, B. A.; MA, A.; CHANG, E. B. (2003)
Enteric flora and lymphocyte-derived cytokines determine expression of heat shock proteins in mouse colonic epithelial cells.
Gastroenterology. **124**: 1395-407
- KOVACEVIC, Z.; MCGIVAN, J. D. (1984)
Glutamine Transport Across Biological Membranes.
Glutamine metabolism in mammalian tissues. SIES, H.; HAEUSSINGER, D. Springer Verlag, Berlin, New York

- KOZAKOVA, H.; MLCKOVA, P.; KOLINSKA, J.; CECHOVA, D.; STEPANKOVA, R.; REHAKOVA, Z.; PROKESOVA, L. (2002)
Differential effect of *Bacillus firmus* on immune response and enterocyte brush-border enzyme levels in BALB/c and B10.BR mice.
2002;**47** (6): 759-65
- KOZAKOVA, H.; REHAKOVA, Z.; KOLINSKA, J. (2001)
Bifidobacterium bifidum monoassociation of gnotobiotic mice: effect on enterocyte brush-border enzymes.
Folia Microbiol (Praha). **46**: 573-6
- KRAMMER, M.; KARBACH, U. (1993)
Antidiarrheal action of the yeast *Saccharomyces boulardii* in the rat small and large intestine by stimulating chloride absorption.
Z Gastroenterol. **31**: 73-77
- KYRIAKIS, S. C.; TSILOYIANNIS, V. K.; VLEMMAS, J.; SARRIS, K.; TSINAS, A. C.; ALEXOPOULOS, C.; JANSEGGERS, L. (1999)
The effect of probiotic LSP 122 on the control of post-weaning diarrhoea syndrome of piglets.
Res Vet Sci. **67**: 223-8
- KÜHN, I. (2000)
Neue Untersuchungen zur Wirkung von ToyoCerin.
Lohmann Information. **2/2000**: 1-6
- LEITGEB, R. (2004)
Überprüfung der Wirksamkeit antibiotischer und mikrobieller Leistungsförderer in der Rindermast.
accessed March 5, 2005. Web Page. Available at:
http://www.dlwt.boku.ac.at/H751_projekt.html?project_id=2329&lang=de&L=0
- LEONHARD-MAREK, S.; SCHRÖDER, B.; BREVES, G. (2003)
Effects of different probiotics on the secretory responses of pig small intestine.
Proc Soc Nutr Physiol. **12**: 67
- LEUZINGER, K. (1998)
Vergleichende Untersuchungen zur Wirksamkeit eines Probiotikums und von erregerspezifischen Dotter- bzw. Kolostrumantikörpern bei der Neugeborenenendiarrhoe des Kalbes unter Berücksichtigung des Immunglobulinstatus.
Dissertation, München, Univ
- LILLY, D. M.; STILLWELL, R. H. (1965)
Probiotics: Growth-promoting factors produced by microorganisms.
Science. **147**: 747-748
- LINEWEAVER, H.; BURK, D. (1934)
The Determination of Enzyme Dissociation Constants.
J. Am Chem. Soc. **56**: 658-66

- LITTLE, D.; DEAN, R. A.; YOUNG, K. M.; MCKANE, S. A.; MARTIN, L. D.; JONES, S. L.; BLIKSLAGER, A. T. (2003)
 PI3K signaling is required for prostaglandin-induced mucosal recovery in ischemia-injured porcine ileum.
 Am J Physiol **284**: G46-56
- LODEMANN, U.; DAHMS, S.; MARTENS, H.; ARNDT, G. (2004a)
 Diskussion eines biometrischen Modells zur Bewertung von Fütterungs-, Alters- und Tiereffekten auf transportphysiologische Eigenschaften der Dünndarmschleimhaut.
 Dtsch. Tierärztl. Wschr. **111**: 209-212
- LODEMANN, U.; FINNAH, A.; LORENZ, B.; MARTENS, H. (2004b)
 Bacillus cereus as probiotic supplement - Effects on absorption and secretion in pig jejunum.
 Proc. Soc. Nutr. Physiol. **13**:132
- LODEMANN, U.; HUBENER, K.; JANSEN, N.; MARTENS, H. (2006)
 Effects of Enterococcus faecium NCIMB 10415 as probiotic supplement on intestinal transport and barrier function of piglets.
 Arch Anim Nutr. **60**: 35-48
- LODEMANN, U.; HUEBENER, K.; JANSEN, N.; MARTENS, H. (2003a)
 Age-dependent changes of glucose transport in the small intestine of piglets with and without supplementation of *Enterococcus faecium*.
 Int. J. Med. Microbiol **293**: Suppl. 36:314
- LODEMANN, U.; HÜBENER, K.; JANSEN, N.; MARTENS, H. (2003b)
 Effects of a probiotic preparation of Enterococcus faecium (SF 68) on epithelial transport properties of pig jejunum.
 Proc. Soc. Nutr. Physiol. **12**: 66
- LODEMANN, U. (2001)
 Transportphysiologische Untersuchungen am isolierten Pansenepithel des Schafes .
 Dissertation, Berlin, Freie Universität Berlin
- LOFFING, J.; MOYER, B. D.; MCCOY, D.; STANTON, B. A. (1998)
 Exocytosis is not involved in activation of Cl⁻ secretion via CFTR in Calu-3 airway epithelial cells.
 Am J Physiol. **275**: C913-20
- LOHMANN ANIMAL HEALTH GMBH & CO. KG. (2004)
 Produktinformation TOYOCERIN 10¹⁰®.
 Cuxhaven: LOHMANN ANIMAL HEALTH GmbH & Co. KG
- LOO, D. D.; HIRAYAMA, B. A.; MEINILD, A. K.; CHANDY, G.; ZEUTHEN, T.; WRIGHT, E. M. (1999)
 Passive water and ion transport by cotransporters.
 J Physiol. **518**: 195-202

- LOO, D. D.; WRIGHT, E. M.; ZEUTHEN, T. (2002)
Water pumps.
J Physiol. **542**: 53-60
- LOO, D. D.; ZEUTHEN, T.; CHANDY, G.; WRIGHT, E. M. (1996)
Cotransport of water by the Na⁺/glucose cotransporter.
Proc Natl Acad Sci U S A. **93**: 13367-70
- LUO, J.; PATO, M. D.; RIORDAN, J. R.; HANRAHAN, J. W. (1998)
Differential regulation of single CFTR channels by PP2C, PP2A, and other phosphatases.
Am J Physiol. **274**: C1397-410
- LYTLE, C.; FORBUSH, B. 3RD (1996)
Regulatory phosphorylation of the secretory Na-K-Cl cotransporter: modulation by cytoplasmic Cl.
Am J Physiol. **270**: C437-48
- LÖHNERT, H. J. (2000)
Toyocerin in der Kälberaufzucht.
Proc. Soc. Nutr. Physiol. **9**: 75
- MACKENZIE, B.; PANAYOTOVA-HEIERMANN, M.; LOO, D. D.; LEVER, J. E.; WRIGHT, E. M. (1994)
SAAT1 is a low affinity Na⁺/glucose cotransporter and not an amino acid transporter. A reinterpretation.
J Biol Chem. **269**: 22488-91
- MADARA, J. L. (1989)
Loosening tight junctions. Lessons from the intestine.
J Clin Invest. **83**: 1089-94
- MADARA, J. L.; BARENBERG, D.; CARLSON, S. (1986)
Effects of cytochalasin D on occluding junctions of intestinal absorptive cells: further evidence that the cytoskeleton may influence paracellular permeability and junctional charge selectivity.
J Cell Biol. **102**: 2125-36
- MADARA, J. L.; DHARMSATHAPHORN, K. (1985)
Occluding junction structure-function relationships in a cultured epithelial monolayer.
J Cell Biol. **101**: 2124-33
- MADARA, J. L.; MOORE, R.; CARLSON, S. (1987)
Alteration of intestinal tight junction structure and permeability by cytoskeletal contraction.
Am J Physiol. **253**: C854-61
- MADSEN, K. L.; TAVERNINI, M. M.; MOSMANN, T. R.; FEDORAK, R. N. (1996)
Interleukin 10 modulates ion transport in rat small intestine.
Gastroenterology. **111**: 936-44

- MARTIN, K. H.; MEYER, L.; SOMMER, K. (1991)
Tafelwerk Mathematik - Physik - Chemie Klassen 11/12.
Volk und Wissen Verlag GmbH, Berlin
- MASYUK, A. I.; MARINELLI, R. A.; LARUSSO, N. F. (2002)
Water transport by epithelia of the digestive tract.
Gastroenterology. **122**: 545-62
- MATTHEWS, J. B.; SMITH, J. A.; NGUYEN, H. (1995)
Modulation of intestinal chloride secretion at basolateral transport sites: opposing effects of cyclic adenosine monophosphate and phorbol ester.
Surgery. **118**: 147-52; discussion 152-3
- MCEWAN, G. T.; SCHOUSBOE, B.; NIELSEN, C. G.; SKADHAUGE, E. (1990)
Effect of age on the secretory capacity of pig small intestine in vivo and in vitro.
Am J Physiol. **259**: G474-80.
- MCEWAN, G. T.; SCHOUSBOE, B.; SKADHAUGE, E. (1991)
Influence of age on antisecretory factor inhibition of enterotoxin action in the pig small intestine.
Zentralbl Veterinarmed A. **38**: 222-8
- MCROBERTS, J. A.; BEUERLEIN, G.; DHARMSATHAPHORN, K. (1985)
Cyclic AMP and Ca²⁺-activated K⁺ transport in a human colonic epithelial cell line.
J Biol Chem. **260**: 14163-72
- MEISTER, A. (1984)
Enzymology of Glutamine.
Glutamine metabolism in mammalian tissues. SIES, H.; HAEUSSINGER, D. Springer Verlag, Berlin, New York
- MERLIN, D.; JIANG, L.; STROHMEIER, G. R.; NUSRAT, A.; ALPER, S. L.; LENCER, W. I.; MADARA, J. L. (1998)
Distinct Ca²⁺- and cAMP-dependent anion conductances in the apical membrane of polarized T84 cells.
Am J Physiol. **275**: C484-95
- MICHAELIS, L.; MENTEN, M. L. (1913)
Die Kinetik der Invertinwirkung.
Biochemische Zeitschrift. **49**: 333-369
- MIETKE, H.; BEER, W.; VOIGT, W.; ZUCKER, B.; REISSBRODT, R. (2000)
Characterization and Differentiation of Probiotic Bacillus cereus Isolates from Feeds.
"FT-IR Spectroscopy in Microbiological and Medical Diagnostic": Berlin, Robert Koch-Institute. Berlin
- MILLER, B. G.; SKADHAUGE, E. (1997)
Effect of weaning in the pig on ileal ion transport measured in vitro.
Zentralbl Veterinarmed A. **44**: 289-99

- MISFELDT, D. S.; SANDERS, M. J. (1981)
Hormonal regulation of epithelial transport of ions and water (V. 372). SCOTT, W. N.; GOODMAN, D. B. P. The New York Academy Of Science, New York
- MIYAMOTO, K.; HASE, K.; TAKETANI, Y.; MINAMI, H.; OKA, T.; NAKABOU, Y.; HAGIHIRA, H. (1992)
Developmental changes in intestinal glucose transporter mRNA levels.
Biochem Biophys Res Commun. **183**: 626-31
- MOTULSKY, H.; CHRISTOPOULUS, A. (2003)
GraphPad Prism, Version 4.0, Fitting Models to Biological Data using Linear and Nonlinear Regression.
GraphPad Software Inc., San Diego CA
- MUNCK, L. K.; GRONDAHL, M. L.; THORBOLL, J. E.; SKADHAUGE, E.; MUNCK, B. G. (2000)
Transport of neutral, cationic and anionic amino acids by systems B, b(o,+), X(AG), and ASC in swine small intestine.
Comp Biochem Physiol A Mol Integr Physiol. **126**: 527-37
- MÖLLER, M. (1997)
In vitro Untersuchungen zur Charakterisierung der elektro- und transportphysiologischen Funktionen der Pars proventricularis des Schweinemagens.
Berlin, Freie Universität
- NATH, S. K.; DECHELOTTE, P.; DARMAUN, D.; GOTTELAND, M.; RONGIER, M.; DESJEUX, J. F. (1992)
[15N]- and [14C]glutamine fluxes across rabbit ileum in experimental bacterial diarrhea.
Am J Physiol. **262**: G312-8
- NAUMANN, C.; BASLER, R. (1993)
Methodenbuch. Die chemische Untersuchung von Futtermitteln. 3. Ergänzungslieferung.
VDLUFA-Verlag, Darmstadt
- NEHER, E. (1991)
Nobel Lecture - Ion channels for communication between and within cells.
The Nobel Prizes 1991. Stockholm
- NEJDFORS, P.; EKELUND, M.; JEPSSON, B.; WESTROM, B. R. (2000)
Mucosal in vitro permeability in the intestinal tract of the pig, the rat, and man: species- and region-related differences.
Scand J Gastroenterol. **35**: 501-7
- NUSRAT, A.; PARKOS, C. A.; VERKADE, P.; FOLEY, C. S.; LIANG, T. W.; INNIS-WHITEHOUSE, W.; EASTBURN, K. K.; MADARA, J. L. (2000)
Tight junctions are membrane microdomains.
J Cell Sci. **113 (Pt 10)**: 1771-81
- OTTE, J. M.; PODOLSKY, D. K. (2004)
Functional modulation of enterocytes by gram-positive and gram-negative microorganisms.
Am J Physiol Gastrointest Liver Physiol. **286**: G613-26

- PAN, M.; MENG, Q.; CHOUDRY, H. A.; KARINCH, A. M.; LIN, C.; SOUBA, W. W. (2004)
Stimulation of intestinal glutamine absorption in chronic metabolic acidosis.
Surgery. **136**: 127-34
- PAN, M.; WOLFGANG, C. A.; KARINCH, A. M.; LIN, C.; MENG, Q.; VARY, T. C.; SOUBA, W. W. (2002)
Protein kinase C activation of intestinal glutamine transport is mediated by mitogen-activated protein kinases.
J Surg Res. **106**: 137-44
- PANAYOTOVA-HEIERMANN, M.; WRIGHT, E. M. (2001)
Mapping the urea channel through the rabbit Na(+)-glucose cotransporter SGLT1.
J Physiol. **535**: 419-25
- PAPPENHEIMER, J. R.; REISS, K. Z. (1987)
Contribution of solvent drag through intercellular junctions to absorption of nutrients by the small intestine of the rat.
J Membr Biol. **100**: 123-36
- PARKER, R. B. (1974)
Probiotics, the other half of the antibiotics story.
Anim. Nutr. Health. **29**: 4-8
- POOL-ZOBEL, B. L. (1997)
Potential role of pro- and prebiotics for the prevention of colorectal cancer.
6th Symposium "Vitamins and Additives in the Nutrition of Man and Animal": Jena (Germany)
- POULSEN, J. H.; FISCHER, H.; ILLEK, B.; MACHEN, T. E. (1994)
Bicarbonate conductance and pH regulatory capability of cystic fibrosis transmembrane conductance regulator.
Proc Natl Acad Sci U S A. **91**: 5340-4
- POWELL, D. W. (1981)
Barrier function of epithelia.
Am J Physiol. **241**: G275-88
- PSCHYREMBEL, W. (2002)
Pschyrembel Klinisches Wörterbuch auf CD-ROM.
von Gruyter, Berlin
- PUCHAL, A. A.; BUDDINGTON, R. K. (1992)
Postnatal development of monosaccharide transport in pig intestine.
Am J Physiol. **262**: G895-902
- RABITO, C. A.; AUSIELLO, D. A. (1980)
Na⁺-dependent sugar transport in a cultured epithelial cell line from pig kidney.
J. Membrane Biol. **54**: 31-38

- REDDIX, R. A.; MULLET, D.; FERTEL, R.; COOKE, H. J. (1998)
Endogenous nitric oxide inhibits endothelin-1-induced chloride secretion in guinea pig colon.
Nitric Oxide. **2** : 28-36
- REID, G. (1999)
Testing the efficacy of Probiotics.
Probiotics: A critical Review. TANNOCK Horizon Scientific Press, Wymondham, UK, 129-140
- RESTA-LENERT, S.; BERTELSEN L. S. ; BARRETT K.E. (2002)
Regulation and dysregulation of epithelial function by good and bad bacteria .
European Intestinal Transport Group (EITG), 18th Meeting: Egmond aan Zee. The Netherlands
- REUSS, L. (2000)
One-hundred years of inquiry: the mechanism of glucose absorption in the intestine.
Annu Rev Physiol. **62**: 939-46
- RHOADS, J. M.; CHEN, W.; CHU, P.; BERSCHNEIDER, H. M.; ARGENZIO, R. A.; PARADISO, A. M. (1994)
L-glutamine and L-asparagine stimulate Na⁺ -H⁺ exchange in porcine jejunal enterocytes.
Am J Physiol. **266**: G828-38
- RHOADS, J. M.; KEKU, E. O.; BENNETT, L. E.; QUINN, J.; LECCE, J. G. (1990)
Development of L-glutamine-stimulated electroneutral sodium absorption in piglet jejunum.
Am J Physiol. **259**: G99-107
- RHOADS, J. M.; KEKU, E. O.; WOODARD, J. P.; BANGDIWALA, S. I.; LECCE, J. G.; GATZY, J. T. (1992)
L-glutamine with D-glucose stimulates oxidative metabolism and NaCl absorption in piglet jejunum.
Am J Physiol. **263**: G960-6
- RIORDAN, J. R. (2005)
Assembly of functional CFTR chloride channels.
Annu Rev Physiol. **67**: 701-18
- RIORDAN, J. R.; ROMMENS, J. M.; KEREM, B.; ALON, N.; ROZMAHEL, R.; GRZELCZAK, Z.; ZIELENSKI, J.; LOK, S.; PLAVSIC, N.; CHOU, J. L.; ET, A. L. (1989)
Identification of the cystic fibrosis gene: cloning and characterization of complementary DNA.
Science. **245**: 1066-73
- ROBERT, A.; NEZAMIS, J. E.; LANCASTER, C.; HANCHAR, A. J. (1979)
Cytoprotection by prostaglandins in rats. Prevention of gastric necrosis produced by alcohol, HCl, NaOH, hypertonic NaCl, and thermal injury.
Gastroenterology. **77**: 433-43

- ROIG-PÉREZ, S.; MORETÓ, M.; FERRER, R. (2002)
Effects of the incubation of Caco-2 cells with docosahexaenoic acid and taurine on tightjunction structure and permeability.
European Intestinal Transport Group (EITG), 18th Meeting: Egmond aan Zee. The Netherlands
- ROMMENS, J. M.; IANNUZZI, M. C.; KEREM, B.; DRUMM, M. L.; MELMER, G.; DEAN, M.; ROZMAHEL, R.; COLE, J. L.; KENNEDY, D.; HIDAKA, N.; ET, A. L. (1989)
Identification of the cystic fibrosis gene: chromosome walking and jumping.
Science. **245**: 1059-65
- ROTH, F. X.; KIRCHGESSNER, M. (1988a)
Nutritive Wirksamkeit von Toyocerin. 1. Mitteilung: Ferkelaufzucht.
Landwirtsch. Forschung. **41**: a 58-62, b 63-70
- SAKATA, T.; KOJIMA, T.; FUJIEDA, M.; MIYAKOZAWA, M.; TAKAHASHI, M.; USHIDA, K. (1999)
Probiotic preparations dose-dependently increase net production rates of organic acids and decrease that of ammonia by pig cecal bacteria in batch culture.
Dig Dis Sci. **44** : 1485-93
- SANGILD, P. T.; DIERNAES, L.; CHRISTIANSEN, I. J.; SKADHAUGE, E. (1993)
Intestinal transport of sodium, glucose and immunoglobulin in neonatal pigs. Effect of glucocorticoids.
Exp Physiol. **78** : 485-97
- SANSOM, B. F.; GLEED, P. T. (1981)
The ingestion of sow's faeces by suckling piglets.
Br J Nutr. **46**: 451-6
- SCHAREK, L.; GUTH, J.; REITER, K.; WEYRAUCH, K. D.; TARAS, D.; SCHWERK, P.; SCHIERACK, P.; SCHMIDT, M. F.; WIELER, L. H.; TEDIN, K. (2005)
Influence of a probiotic Enterococcus faecium strain on development of the immune system of sows and piglets.
Vet Immunol Immunopathol. **105**: 151-61
- SCHEFFLER, A. (1984)
Charakterisierung der Wirkung von Pharmaka auf die elektrophysiologischen Parameter gastrointestinaler Epithelgewebe mit einer mikrocomputer-gesteuerten Strom- und Spannungsklemmeinrichtung.
Dissertation, Aachen, Hochschule Aachen
- SCHIERACK, P.; STEINRUCK, H.; KLETA, S.; VAHJEN, W. (2006)
Virulence factor gene profiles of Escherichia coli isolates from clinically healthy pigs.
Appl Environ Microbiol. **72**: 6680-6.
- SCHLEGEL, H. G. (1992)
Allgemeine Mikrobiologie.
Thieme-Verlag, Stuttgart

- SCHLEIF, J.; MIETKE, H. (2002)
 Establishing an FT-IR data bank for the discrimination of probiotic
 Bacillus cereus-isolates from potentially toxic-strains.
 "FT-IR Spectroscopy in Microbiological and Medical Diagnostic": Berlin, Robert Koch-
 Institut. Berlin
- SCHRODER, B.; KAUNE, R.; HARMEYER, J. (1991)
 Effects of calcitriol on stimulation of ion transport in pig jejunal mucosa.
 J Physiol. **433**: 451-65
- SCHROEDER, B.; DUNCKER, S.; BARTH, S.; BAUERFEIND, R.; GRUBER, A. D.;
 DEPPENMEIER, S.; BREVES, G. (2006)
 Preventive effects of the probiotic Escherichia coli strain Nissle 1917 on acute secretory
 diarrhea in a pig model of intestinal infection.
 Dig Dis Sci. **51**: 724-31
- SCHROEDER, B.; WINCKLER, C.; FAILING, K.; BREVES, G. (2004)
 Studies on the time course of the effects of the probiotic yeast Saccharomyces boulardii on
 electrolyte transport in pig jejunum.
 Dig. Dis. Sci. **49**: 1311-7
- SCHRÖDER, B.; BREVES, G. (2004)
 Ernährungsphysiologische Bedeutung von Probiotika - Positive Wirkungen wissenschaftlich
 nachgewiesen.
 Vetimpulse. **13**: 4-5
- SCHULTHEIB, G. (1995)
 Calcium-Sensitiver, Elektrogener Natriumtransport des Psalterepithels von Schafen.
 Dissertation, Berlin, Freie Universität Berlin
- SCHULTZ, S. G.; CURRAN, P. F. (1970)
 Coupled transport of sodium and organic solutes.
 Physiol Rev. **50**: 637-718.
- SCHULTZ, S. G.; ZALUSKY, R. (1964a)
 ION TRANSPORT IN ISOLATED RABBIT ILEUM. I. SHORT-CIRCUIT CURRENT AND NA
 FLUXES.
 J Gen Physiol. **47**: 567-84
- SCHULTZ, S. G.; ZALUSKY, R. (1964b)
 ION TRANSPORT IN ISOLATED RABBIT ILEUM. II. THE INTERACTION BETWEEN ACTIVE
 SODIUM AND ACTIVE SUGAR TRANSPORT.
 J Gen Physiol. **47**: 1043-59
- SCHULZKE, J. D.; FROMM, M.; BENTZEL, C. J.; ZEITZ, M.; MENGE, H.; RIECKEN, E. O.
 (1992)
 Ion transport in the experimental short bowel syndrome: Increased glucose-dependent Na-
 absorption is the main adaptive response .
 Gastroenterology. **102**: 497-504

- SCIENTIFIC COMMITTEE ON ANIMAL NUTRITION ; EUROPEAN COMMISSION (2001)
Report of the Scientific Committee on Animal Nutrition on Product Toyocerin for Use As Feed Additive
- SHULL, G. E.; MILLER, M. L.; SCHULTHEIS, P. J. (2000)
Lessons from genetically engineered animal models VIII. Absorption and secretion of ions in the gastrointestinal tract.
Am J Physiol Gastrointest Liver Physiol. **278**: G185-90
- SIDHU, M.; COOKE, H. J. (1995)
Role for 5-HT and ACh in submucosal reflexes mediating colonic secretion.
Am J Physiol. **269**: G346-51
- SIMON, O. (2005)
Micro-organisms as Feed Additiv - Probiotics -
Banff, Canada
- SIMON, O.; JADAMUS, A.; VAHJEN, W. (2001)
Probiotic feed additives - effectiveness and expected modes of action.
Journal of Animal and Feed Sciences. **10, Suppl. 1**: 51-67
- SINGER, S. J. (2004)
Some early history of membrane molecular biology.
Annu Rev Physiol. **66**: 1-27
- SINGH, A. K.; TASKEN, K.; WALKER, W.; FRIZZELL, R. A.; WATKINS, S. C.; BRIDGES, R. J.; BRADBURY, N. A. (1998)
Characterization of PKA isoforms and kinase-dependent activation of chloride secretion in T84 cells.
Am J Physiol. **275**: C562-70
- SKOU, J. C. (1997)
Nobel Lecture - The identification of the sodium-potassium pump.
The Nobel Prizes 1997. Stockholm
- SMITH, W. L.; MARNETT, L. J. (1991)
Prostaglandin endoperoxide synthase: structure and catalysis.
Biochim Biophys Acta. **1083**: 1-17
- SNEATH, P. H. A. (1986)
Endospore-forming gram-positive rods and cocci.
Bergey's manual of systematic bacteriology. SNEATH, P. H. A. E. AL. Williams &Wilkins, Baltimore, **2** 1104
- SONNTAG, A. K.; BIELASZEWSKA, M.; MELLMANN, A.; DIERKSEN, N.; SCHIERACK, P.; WIELER, L. H.; SCHMIDT, M. A.; KARCH, H. (2005)
Shiga toxin 2e-producing Escherichia coli isolates from humans and pigs differ in their virulence profiles and interactions with intestinal epithelial cells.
Appl Environ Microbiol. **71**: 8855-63.

- STEIDLER, L.; HANS, W.; SCHOTTE, L.; NEIRYNCK, S.; OBERMEIER, F.; FALK, W.; FIERS, W.; REMAUT, E. (2000)
Treatment of murine colitis by *Lactococcus lactis* secreting interleukin- 10.
Science. **289**: 1352-5
- STEVENS, B. R.; FERNANDEZ, A.; HIRAYAMA, B.; WRIGHT, E. M.; KEMPNER, E. S. (1990)
Intestinal brush border membrane Na⁺/glucose cotransporter functions in situ as a homotetramer.
Proc Natl Acad Sci U S A. **87**: 1456-60
- STEVENS, C. E. (1964)
Transport of sodium and chloride by the isolated rumen epithelium.
Am J Physiol. **206**: 1099-1105
- STEWART, C. P.; TURNBERG, L. A. (1987)
Glucose depolarizes villous but not crypt cell apical membrane potential difference: a micropuncture study of crypt-villus heterogeneity in the rat.
Biochim Biophys Acta. **902**: 293-300
- SUSSMAN, C. R.; RENFRO, J. L. (1997)
Heat shock-induced protection and enhancement of Na⁺-glucose cotransport by LLC-PK1 monolayers.
Am J Physiol. **273**: F530-7
- TAKAHASHI, A.; WATKINS, S. C.; HOWARD, M.; FRIZZELL, R. A. (1996)
CFTR-dependent membrane insertion is linked to stimulation of the CFTR chloride conductance.
Am J Physiol. **271**: C1887-94
- TALARICO, T. L.; CASAS, I. A.; CHUNG, T. C.; DOBROGOSZ, W. J. (1988)
Production and isolation of reuterin, a growth inhibitor produced by *Lactobacillus reuteri*.
Antimicrob Agents Chemother. **32**: 1854-8.
- TANG, X. D.; SANTARELLI, L. C.; HEINEMANN, S. H. ; HOSHI, T. (2004)
Metabolic regulation of potassium channels.
Annu Rev Physiol. **66**: 131-59
- TARAS, D.; VAHJEN, W.; MACHA, M.; SIMON, O. (2005)
Response of performance characteristics and fecal consistency to long-lasting dietary supplementation with the probiotic strain *Bacillus cereus* var. *toyoi* to sows and piglets.
Arch Anim Nutr. **59**: 405-417
- TARAS, D.; VAHJEN, W.; MACHA, M.; SIMON, O. (2006)
Performance, diarrhea incidence, and occurrence of *Escherichia coli* virulence genes during long-term administration of a probiotic *Enterococcus faecium* strain to sows and piglets.
J Anim Sci. **84**: 608-17.

- TAVALALI, S.; MANKERTZ, J.; FROMM, M.; SCHULZKE, J. D. (2002)
Disturbance of the epithelial barrier by pro-inflammatory cytokines is correlated with altered expression of tight junction genes.
European Intestinal Transport Group (EITG), 18th Meeting: Egmond aan Zee. The Netherlands
- TEBBE, B.; MANKERTZ, J.; SCHWARZ, C.; AMASHEH, S.; FROMM, M.; ASSAF, C.; SCHULTZ-EHRENBURG, U.; SANCHEZ RUDERISH, H.; SCHULZKE, J. D.; ORFANOS, C. E. (2002)
Tight junction proteins: a novel class of integral membrane proteins. Expression in human epidermis and in HaCaT keratinocytes.
Arch Dermatol Res. **294**: 14-8
- THE NOBEL FOUNDATION (1967)
Nobel Lectures, Physiology or Medicine 1901-1921.
Elsevier Publishing Company, Amsterdam
- THELEN, U. (1997)
Einfluß zweier Varianten von *Bacillus cereus* als Probiotika beim frühentwöhnten Ferkel unter Einbeziehung ernährungsphysiologischer, mikrobiologischer, histologischer und hämatologischer Aspekte .
Dissertation, Gießen, Univ
- THELEN, U.; WEIß, R.; BALJER, G.; PALLAUF, J. (2004)
Einfluss zweier probiotischer Futterzusatzstoffe von *Bacillus cereus* auf Zusammensetzung der Darmflora und zootecnische Parameter beim früh entwöhnten Ferkel.
Tierärztliche Praxis Großtiere. **32**: 212
- THOMSON, A. B. R.; DIETSCHY, J. M. (1980)
Experimental demonstration of the Effect of unstirred water layer on the kinetic constants of the membrane transport of D-Glucose in rabbit jejunum.
J Membr Biol. **54**: 221-229
- THORBOLL, J. E.; BINDSLEV, N.; TINDHOLDT, T. T.; SCHMIDT, P.; CHRISTENSEN, P.; SKADHAUGE, E. (1998)
Tachykinins mediate changes in ion transport in porcine jejunum through release of prostaglandins and neurotransmitters.
Regul Pept. **77**: 105-11
- THORENS, B. (1993)
Facilitated glucose transporters in epithelial cells.
Annu Rev Physiol. **55**: 591-608
- THORENS, B.; CHENG, Z. Q.; BROWN, D.; LODISH, H. F. (1990)
Liver glucose transporter: a basolateral protein in hepatocytes and intestine and kidney cells.
Am J Physiol. **259**: C279-85

- TRAVIS, S. M.; BERGER, H. A.; WELSH, M. J. (1997)
Protein phosphatase 2C dephosphorylates and inactivates cystic fibrosis transmembrane conductance regulator.
Proc Natl Acad Sci U S A. **94**: 11055-60
- TUNGGAL, J. A.; HELFRICH, I.; SCHMITZ, A.; SCHWARZ, H.; GUNZEL, D.; FROMM, M.; KEMLER, R.; KRIEG, T.; NIESSEN, C. M. (2005)
E-cadherin is essential for in vivo epidermal barrier function by regulating tight junctions.
EMBO J. **24**: 1146-56
- TURNER, J. R.; ANGLE, J. M.; BLACK, E. D.; JOYAL, J. L.; SACKS, D. B.; MADARA, J. L. (1999)
PKC-dependent regulation of transepithelial resistance: roles of MLC and MLC kinase.
Am J Physiol. **277**: C554-62
- TURNER, J. R.; RILL, B. K.; CARLSON, S. L.; CARNES, D.; KERNER, R.; MRSNY, R. J.; MADARA, J. L. (1997)
Physiological regulation of epithelial tight junctions is associated with myosin light-chain phosphorylation.
Am J Physiol. **273**: C1378-85
- TURNER, R. J. (1986)
beta-Amino acid transport across the renal brush-border membrane is coupled to both Na and Cl.
J Biol Chem. **261**: 16060-6
- TURNHEIM, K. (1991)
Intrinsic regulation of apical sodium entry in epithelia.
Physiol Rev. **71**: 429-45
- UMBACH, J. A.; COADY, M. J.; WRIGHT, E. M. (1990)
Intestinal Na⁺/glucose cotransporter expressed in *Xenopus* oocytes is electrogenic.
Biophys J. **57**: 1217-24
- UNMACK, M. A. (2000):
Arachidonic acid cascade in the porcine small intestine - Aspects of secretory effects of isoprostanes and prostanoids and their involvement in *Salmonella*- and cholera toxin-induced secretion.
Dissertation, Frederiksberg C, Denmark, Department of Anatomy and Physiology, The Royal Veterinary and Agricultural University
- UNMACK, M. A.; HANSEN, M. B.; GRONDAHL, M. L.; OLSEN, J. E.; CHRISTENSEN, P.; SKADHAUGE, E. (2001a)
Effects of indomethacin on *Salmonella typhimurium*- and cholera toxin- induced fluid accumulation in the porcine small intestine.
J Vet Med A Physiol Pathol Clin Med. **48**: 153-63
- UNMACK, M. A.; RANGACHARI, P. K.; SKADHAUGE, E. (2001b)
Effects of isoprostanes and prostanoids on porcine small intestine.
J Pharmacol Exp Ther. **296**: 434-41

- USSING, H. H. (1949)
The active ion transport through the isolated frog skin in the light of tracer studies.
Acta Phys. Scand. **17**: 1-37
- USSING, H. H. (1965)
Transport of electrolytes and water across epithelia.
Harvey Lect. **59**: 1-30
- USSING, H. H.; WINDHAGER, E. E. (1964)
Nature of Shunt Path and Active Sodium Transport Path through Frog Skin Epithelium.
Acta Physiol. Scand. **61**: 484-504
- USSING, H. H.; ZERAHN, K. (1951)
Active transport of sodium as the source of electric current in the short-circuited isolated frog skin. Reprinted from *Acta. Physiol. Scand.* 23: 110-127, 1951.
J Am Soc Nephrol. **10**: 2056-65
- VAANDRAGER, A. B.; SMOLENSKI, A.; TILLY, B. C.; HOUTSMULLER, A. B.; EHLERT, E. M.; BOT, A. G.; EDIXHOVEN, M.; BOOMAARS, W. E.; LOHMANN, S. M.; DE JONGE, H. R. (1998)
Membrane targeting of cGMP-dependent protein kinase is required for cystic fibrosis transmembrane conductance regulator Cl⁻ channel activation.
Proc Natl Acad Sci U S A. **95**: 1466-71
- VAJANAPHANICH, M.; SCHULTZ, C.; TSIEN, R. Y.; TRAYNOR-KAPLAN, A. E.; PANDOL, S. J.; BARRETT, K. E. (1995)
Cross-talk between calcium and cAMP-dependent intracellular signaling pathways. Implications for synergistic secretion in T84 colonic epithelial cells and rat pancreatic acinar cells.
J Clin Invest. **96**: 386-93
- VANBELLE, M.; TELLER, E.; FOCANT, M. (1990)
Probiotics in animal nutrition: a review.
Arch Tierernahr. **40**: 543-67
- VEYHL, M.; WAGNER, C. A.; GORBOULEV, V.; SCHMITT, B. M.; LANG, F.; KOEPEL, H. (2003)
Downregulation of the Na⁽⁺⁾- D-glucose cotransporter SGLT1 by protein RS1 (RSC1A1) is dependent on dynamin and protein kinase C.
J Membr Biol. **196**: 71-81
- WEYMER, A.; HUOTT, P.; LIU, W.; MCROBERTS, J. A.; DHARMSATHAPHORN, K. (1985)
Chloride secretory mechanism induced by prostaglandin E1 in a colonic epithelial cell line.
J Clin Invest. **76**: 1828-36
- WILSON, K. H.; PERINI, F. (1988)
Role of competition for nutrients in suppression of *Clostridium difficile* by the colonic microflora.
Infect Immun. **56**: 2610-4

- WINCKLER, C.; BREVES, G.; BOLL, M.; DANIEL, H. (1999)
 Characteristics of dipeptide transport in pig jejunum in vitro.
 J Comp Physiol [B]. **169**: 495-500
- WINCKLER, C.; SCHRÖDER, B.; BREVES, G. (1998)
 Effects of *Saccharomyces boulardii*, *Bacillus cereus* var. *caron* and *Bacillus cereus* var. *toyoi*
 on epithelial transport functions in pig jejunum.
 Z. Gastroenterol. **Suppl. 1**: 30-37
- WINCKLER, C. (1997)
 In-vitro-Untersuchungen zur Wirkung von *Saccharomyces boulardii*, *Bacillus cereus* var.
caron und *Bacillus cereus* var. *toyoi* auf die intestinale Barriere beim Schwein .
 Dissertation, Universität Gießen
- WINDMUELLER, H. G. (1982)
 Glutamine utilization by the small intestine.
 Adv Enzymol Relat Areas Mol Biol. **53**: 201-37
- WINER, B. J. (1971)
 Statistical Principles in Experimental Design.
 McGraw-Hill Book Company, New York
- WRIGHT, E. M. (1993)
 The intestinal Na⁺/glucose cotransporter.
 Annu Rev Physiol. **55**: 575-89
- WRIGHT, E. M.; HARMS, V.; MIRCHEFF, A. K.; VAN OS, C. H. (1981)
 Hormonal regulation of epithelial transport of ions and water (V. 372). SCOTT, W. N.;
 GOODMAN, D. B. P. The New York Academy Of Science, New York.
- WRIGHT, E. M.; HIRSCH, J. R.; LOO, D. D.; ZAMPIGHI, G. A. (1997)
 Regulation of Na⁺/glucose cotransporters.
 J Exp Biol. **200 (Pt 2)**: 287-93
- WRIGHT, E. M.; LOO, D. D.; HIRAYAMA, B. A.; TURK, E. (2004)
 Surprising versatility of Na⁺-glucose cotransporters: SLC5.
 Physiology (Bethesda). **19**: 370-6
- WRIGHT, E. M.; TURK, E.; ZABEL, B.; MUNDLOS, S.; DYER, J. (1991)
 Molecular genetics of intestinal glucose transport.
 J Clin Invest. **88**: 1435-40
- WU, G.; KNABE, D. A.; YAN, W.; FLYNN, N. E. (1995)
 Glutamine and glucose metabolism in enterocytes of the neonatal pig.
 Am J Physiol. **268**: R334-42
- YU, P.; HUBER, J. T.; THEURER, C. B.; CHEN, K. H.; NUSSIO, L. G.; WU, Z. (1997)
 Effect of steam-flaked or steam-rolled corn with or without *Aspergillus oryzae* in the diet on
 performance of dairy cows fed during hot weather.
 J Dairy Sci. **80**: 3293-7

YURKO-MAURO, K. A.; REENSTRA, W. W. (1998)

Prostaglandin F₂α stimulates CFTR activity by PKA- and PKC-dependent phosphorylation.

Am J Physiol. **275**: C653-60

ZEUTHEN, T.; MEINILD, A. K.; KLAERKE, D. A.; LOO, D. D.; WRIGHT, E. M.; BELHAGE, B.; LITMAN, T. (1997)

Water transport by the Na⁺/glucose cotransporter under isotonic conditions.

Biol Cell. **89**: 307-12

ZHANG, H.; MALO, C.; BOYLE, C. R.; BUDDINGTON, R. K. (1998)

Diet influences development of the pig (*Sus scrofa*) intestine during the first 6 hours after birth.

J Nutr. **128**: 1302-10